

Claims

1. A monomer composition characterized by being curable to form a resin suitable for optical products comprising:

a.) a monomer represented by the formula:



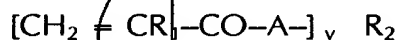
wherein R is a hydrocarbon or substituted hydrocarbon radical, Y is oxygen or sulfur and x is two or more;

b.) a polyene monomer; and

c.) a monomer containing two or more active hydrogen containing groups.

2. The composition of claim 1 wherein Y is oxygen.

3. The composition of claim 2 wherein the polyene is represented by the formula:



wherein R₁ is H or CH₃; A is oxygen, sulfur, or NH, R₂ is a polyvalent aliphatic or alicyclic and aromatic hydrocarbon residue, and y is 2-6.

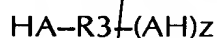
4. The composition of claim 3 wherein the monomer containing two or more active hydrogen containing groups is selected from the group consisting of polythiol monomers, polyamine monomers, and mercapto group containing hydroxy monomers.

5. The composition of claim 4 wherein the monomer containing two or more active hydrogen containing groups is a polythiol.

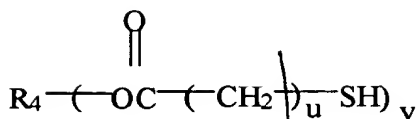
6. The composition of claim 5 wherein the polyisocyanate monomer is an aromatic diisocyanate.

7. The composition of claim 6 wherein the polyene monomer is a tri, or tetraacrylate compound.

8. The composition of claim 7 wherein the polythiol monomer is selected from the group consisting of a compound represented by the formula:



wherein R₃ is an organic group consisting of polyvalent aliphatic or alicyclic and aromatic hydrocarbon, z is an integer of 1 to 30, and A is O, S or NH; and



wherein R_4 is a substituted or unsubstituted aliphatic polyhydric alcohol residue, u is an integer of 1 or 2, and v is an integer of 2 to 4.

9. The composition of claim 8 wherein the polyisocyanate is m-xylylene diisocyanate, the polyene is pentaerythritol tetraacrylate, and the polythiol is selected from the group consisting of pentaerythritol tetrakis(2-mercaptoacetate) 1,2-ethanedithiol and mixtures thereof.

10. The composition of claim 9 wherein the polyene is triallyl-1,2, 5-triazine-2,4,6(1H, 3H, 5H)-trione.

11. A process for making resins suitable for optical uses comprising reacting a curable composition comprising the composition of claim 1.

12. The process of claim 11 wherein the monomers are admixed under non-reactive conditions.

13. The process of claim 11 wherein the monomers are admixed at a temperature of room temperature or below.

14. The process of claim 13 wherein an initiator is added to the composition.

15. The process of claim 14 wherein the initiator is 1,1'-azobis(cyclohexanecarbonitrile) and a reaction catalyst is dibutyltindilaurate or tributylamine.

16. The process of claim 11 wherein the composition is cured by heating the composition to a first temperature of about 0° to 60°C, then heating the composition gradually to a second temperature of about 100 to 150°C over a period of about 1 to 32 hours, maintaining the composition at the second temperature for about 4 to 32 hours, then cooling the composition to a third temperature of about 20 to 40°C over a period of about 1 to 32 hours.

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- 1 17. The composition of claim 1 wherein photochromic materials are used to
2 provide a tinted optical product.
- 1 18. The composition of claim 17 wherein the photochromic materials are
2 naphthopyran compounds, spiro compounds or indoline compounds.
- 1 19. A polymer product made polymerizing the composition of claim 1.
- 1 20. A polymer product made by polymerizing the composition of claim 9.
- 1 21. A curable monomer composition for making a linear polymer for optical
2 products comprising the composition of claim 1 and which is solution polymerized
3 or bulk polymerized.
- 1 22. A linear polymer product made according to claim 21.

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